

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE TITLE:

[AN IMPROVED] FLAME ATMOSPHERE ANALYZER
AND A WATER-HEATING DEVICE INCLUDING THE ANALYZER

IN THE CLAIMS:

Claims 11-20 have been added.

1 1. (Amended) A flame atmosphere analyzer comprising:

2 [-] a tube defining [in which] an air-gas intake and mixing
3 chamber [is defined,];

4 [-] a gas-supply nozzle [and primary combustion-air supply
5 means] opening into the air-gas intake and mixing chamber[,];

6 [-] a flame burner comprising at least one flame jet which is in
7 flow communication with the air-gas intake and mixing chamber in order to
8 supply an air-gas mixture formed in the air-gas intake and mixing chamber to
9 the burner[,]; and

10 [characterized in that the] a primary combustion air-supply
11 means [comprise] comprising at least one duct which has a first end in flow
12 communication with the air-gas intake and mixing chamber and which is open
13 at the opposite, second end in order to take in the primary combustion air in
14 a position remote and at a predetermined distance from the air-gas intake and
15 mixing chamber in the tube.

1 2. (Amended) [An] The analyzer according to Claim 1 in
2 which the duct is tubular.

1 3. (Amended) [An] The analyzer according to Claim 1 [or
2 Claim 2,] further comprising a flame-detection means connected to a circuit
3 for controlling the supply of gas to the gas-supply nozzle in order to interrupt
4 the gas-flow to the gas-supply nozzle when the level of oxygen in the primary
5 combustion air taken from the duct falls below a predetermined value
6 bringing about detachment of the flame from the burner and consequent
7 intervention of the flame-detection means.

1 4. (Amended) [An] The analyzer according to Claim 3 in
2 which the flame-detection means comprises a thermocouple flame sensor.

1 5. (Amended) [An] The analyzer according to Claim 4 in
2 which the burner comprises at least two flame jets which diverge from one
3 another and the side walls of which are substantially closed to the exterior
4 except for an optional connecting duct between the flame jets for the lighting
5 of one by [means of] the other, the thermocouple flame sensor being
6 positioned relative to the jets in a manner such as to be struck by the flame of
7 only one of them.

1 6. (Amended) A water-heating device [including a flame
2 atmosphere analyzer according to one or more of the preceding claims and]
3 comprising:

4 a flame atmosphere analyzer including:

5 (a) a tube defining an air-gas intake and mixing chamber,

6 (b) a gas-supply nozzle opening into the air-gas intake
7 and mixing chamber,

8 (c) a flame burner comprising at least one flame jet
9 which is in flow communication with the air-gas intake and mixing chamber
10 in order to supply an air-gas mixture formed in the air-gas intake and mixing
11 chamber to the burner, and

12 (d) a primary combustion air-supply means comprising at
13 least one duct which has a first end in flow communication with the air-gas
14 intake and mixing chamber and which is open at the opposite, second end in
15 order to take in the primary combustion air in a position remote and at a
16 predetermined distance from the air-gas intake and mixing chamber in the
17 tube;

18 a combustion chamber;

19 [-] a main burner disposed in [a] the combustion chamber and
20 piloted by the analyzer[.]; and

21 [-] means for admitting air to the combustion chamber,
22 including partition means for the air admitted to the combustion chamber,
23 [characterized in that] the duct [is extended] extending into the combustion
24 chamber from the tube of the analyzer so as to take in the primary
25 combustion air in the vicinity of the main burner.

1 7. (Amended) [A] The device according to Claim 6 further
2 comprising means for discharging the combustion fumes from a first portion
3 of the combustion chamber and in which the partition means comprises at
4 least one flame-arresting grid for containing the flame within the combustion
5 chamber, the at least one grid being arranged in a second portion of the
6 combustion chamber opposite the discharge means [for the discharge of the
7 combustion fumes], and the duct for taking in primary combustion air
8 opening in the [said] second portion of the combustion chamber.

1 8. (Amended) [A] The device according to Claim 7 in
2 which the duct opens in the combustion chamber in the vicinity of the flame-
3 arresting grid in order to detect any changes in the oxygen level of the
4 primary combustion air as a result of at least partial obstruction of the flame-
5 arresting grid.

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1 9. (Amended) [A] The device according to [one or more of
2 Claims 6 to] Claim 8, in which the duct comprises a first portion extending
3 from the air-gas intake and mixing chamber in the tube and a second portion
4 forming an extension of the first portion with a predetermined inclination to
5 the first portion and opening at the opposite, free end of the duct.

1 10. (Amended) [A] The device according to [one or more of
2 Claims 6 to] Claim 9, further comprising a tank for the storage and heating
3 of water for hygiene purposes.

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